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Name of Examination : **Summer 2021** - (Preview)

Course Code & Course Name : **ME253U - Material Science and Engineering Metallurgy**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

1) Solve all sub-questions

- a) Explain the mechanisms of plastic deformation [8]
- b) What is strain hardening? Explain the phenomenon on the basis of dislocation theory. [8]

2) Solve any two sub-question

- a) Define and explain the following terms [8]
 - i) Resilience ii) Toughness iii) Ductility iv) Malleability
- b) Explain Poldi hardness test in details. [8]
- c) State the various factors affecting the properties of cast irons. Explain their influence in brief. [8]

3) Solve any two sub-question

- a) Describe applications of steels. [8]
- b) What is tool steels? How they are classified and designated according to AISI [8]
- c) Define hardenability. How hardenability is measured? What affects the hardenability of a steel? [8]

4) Solve all sub-questions

- a) Describe the lever rule as applied to equilibrium diagrams. [6]
- b) Explain Aluminum bronze with its applications. [6]

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